# BRASS

Brass is an alloy of Copper, Zinc, and a smaller proportion of Lead, featuring greater hardness than Copper but with excellent machinability due to the properties of Copper, its primary component. It is resistant to oxidation, saline conditions, and is ductile, allowing it to be rolled into thin sheets.

The proportions of Copper and Zinc can be varied to create a range (groups) of brasses with different properties, with the Copper content serving as the basis for differentiation. In industrial-grade brasses, the Zinc content is always kept below 50%, influencing mechanical properties, fusibility, and suitability for processes such as casting, forging, stamping, and machining.

Lead in brass is virtually insoluble and separates into fine globules, which aids in the fragmentation of chips during machining. Additionally, Lead has a lubricating effect due to its low melting point, which helps reduce wear on cutting tools.

Brasses do not produce sparks from mechanical impact, making them an important material for manufacturing containers used in handling flammable compounds.

## ALLOY: VL - 377 = UNS C37700 = SAE 88

This alloy, in its standard condition (hot-extruded/forged, air-cooled, and drawn), is presented as bars and/or plates in various geometric shapes and offers excellent machinability. It is primarily used for hot forging; it cannot undergo severe cold working as the material tends to crack due to its content.

### Chemical Composition:

| %Cu | %Pb | %Zn | % Fe |
|---|---|---|---|
| 58 - 61 | 1,5 - 2,5 | balance | 0,3 max. |

### Mechanical and Physical Properties:

- **Tensile Strength,** *Kg/mm²*..... 36,6
- **Yield Strength,** *Kg/mm²*..... 20
- **Elongation,** *%*..... 45
- **Hardness,** *HB (10 mm / 500 Kg)*..... 72
- **Thermal Conductivity,** *W / m °C (20 °C)*..... 120
- **Coefficient of thermal Expansion,** *$10^{-6}$ / °C (20 - 300 °C)*..... 20,7
- **Electrical Conductivity,** *% IACS (20 °C)*..... 27
- **Operating Temperature,** *°C*..... 180
- **Operating Load or Pressure,** *Kg/mm²*..... -

### Technical manufacturing standards:

- Chemical Composition and Mechanical Properties: UNS C 37700 = SAE 88 = DIN 17660 CuZn39Pb2
- Extruded/Drawn. : ASTM B124
- Hot Forged. : ASTM B283

### Main Uses and Application:

Applications requiring low friction, such as locks, faucets, clamps, screws, nuts. ● Forged valve parts and housings for flammable gases, faucets, and electrical applications. ● Sanitary installation accessories, latches, hinges. ● Small components for fishing and marine equipment.

✱ ***Referential Specifications for Chemical Composition, Mechanical, and Physical Properties based on the Unified Numbering System (UNS-C) of the Copper Development Association (CDA) for cast and forged copper alloys; subject to written confirmation by VULCANO METALS***

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